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Title: Sound Emitting fishing lure

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BACKGROUND OF THE INVENTION

The disclosed invention relates generally to fishing tackle and more specifically to an apparatus capable of emitting a tuned sound or a combination of sounds to attract fish.

It has long been known that fish are attracted to sound, and that fish are attracted to certain frequencies of sound more than others. Yet, to date, the only fishing lures that can be tuned to emit sound in a narrow frequency range have required elaborate electronic circuits, speakers, and batteries. In addition, none of these components were designed to take the tremendous battering associated with the everyday use the average fishing lure endures, thereby doming this type of apparatus to failure. The instant invention, on the other hand, lends itself well to the riggers of constantly being cast into the water and retrieved. The present invention can be tuned to emit a wide spectrum of sounds, and it accomplishes this without an internal power supply. The disclosed invention uses only the movement of the fishing lure it is housed in as a power source to manufacture sound. There are numerous lures produced today that emit sound, but for the most part the sound they emit is white noise made by using small pieces of metal encapsulated within the lure to make a rattling sound or something similar. Other fishing lures are designed to disturb the water in some way either by creating splashing sounds, or by oscillating as they are retrieved. But to date no one has succeeded in producing a line of mechanically operated fishing lures capable of being tuned by the manufacture to emit a frequency the manufacture believes to be most attractive to a specific species of fish.

SUMMARY OF THE INVENTION

The present invention is directed to an apparatus which meets the needs identified above. The present invention enables the manufacture to set the frequency or frequency range at which the lure emits sound, allowing for a full line of custom lures each targeting a specific species of game fish in either salt water or fresh water, furthermore

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the instant invention is durable enough to withstand years of normal use. In one embodiment the apparatus is a tuning fork and a striker used to activate the tuning fork. The apparatus is mounted inside a fishing lure. Once struck, the tuning fork transmits the frequency(s) it is tuned to into the water. This apparatus will allow the manufacture to tune a lure to a frequency(s) that the manufacture wishes to use to target a specific species of game fish. An alternate method of producing a tuned, but somewhat less pure sound is also disclosed. This is accomplished by using a piece of spring steel "a comb" with one or more teeth cut into it. A nib or pick is mounted on a pendulum, and as the pendulum swings the nib or pick bends the spring steel from its resting position and then releases it producing a sound. This same method is used to produce the sound from a music box. A nib or pick can also be used to activate a tuning fork.

The instant invention can be placed in a multitude of body styles, either replacing the existing noise emitter or in combination with the existing emitter to enhance the attractiveness of the lure.

One embodiment of the apparatus is comprised of a tubular shaped, watertight, housing (shell) closed at each end in the general shape of a capsule or torpedo. A tuning fork is attached at some point to the interior wall of the torpedo shaped housing (shell). The shell is weighted in such a way as to allow one section of the shell to always remain oriented downward while it's floating in water, hereafter referred to as the bottom of the shell. A thin wire having two ends is used as a striker guide. At some point along the bottom of the shell one end of wire is attached. This wire runs rearward and upward at an angle between the tine of the tuning fork until it contacts the inside top of the housing where the second end of the wire is attached. This wire is the guide for the striker; the striker can be any shape. For simplicity, in this embodiment we are using a barrel shaped striker. The striker has a hole through it allowing it to be slide mounted on the striker guide so that it will slide up and down the guide freely. At rest, the angle of the striker guide must be great enough to allow the striker to slide down the striker guide to the bottom. The angle of the striker guide must be small enough to allow the striker to slide up the striker guide to make contact with the tuning fork when the lure is jerked forward. The striker, being at rest, tends to remain at rest. As the lure moves forward the striker

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moves up the striker guide until it intersects the tuning fork, strikes the tuning fork and rebounds back to the bottom.

An alternative to the striker and striker guide in the aforementioned embodiment is to replace the sliding striker and guide with a pendulum and a pendulum axle. The pendulum can be mounted vertically, horizontally or any angle in between as long as it is mounted in such a manner as to allow it to strike the tuning fork once the lure is jerked forward. A spring can be added to hold the pendulum in a ready position. The pendulum is rotatably mounted on an axle in such a way as to allow the weighted end of the pendulum to swing from one side of the interior wall to the other side of the interior wall. And is mounted in such a manner as to allow the weighted end of the pendulum, or a nib mounted on the pendulum to come into contact with the tuning fork as the fishing lure is jerked forward. As the lure is jerked forward, the weighted end of the pendulum moves in the opposite direction of the shell. This action rotates the weighted end of the pendulum to a point where it strikes the tuning fork, and then, the pendulum rebounds, swinging in an ever decreasing arc until the pendulum runs out of momentum or is activated once again by a second jerk on the fishing line. The pendulum striking, and then, rebounding from the tuning fork causes the tuning fork to vibrate. The tuning fork is mounted to the shell so the vibrations are transferred to the shell. The shell is in contact with the water; therefore, the shell transfers the vibration to the water thus attracting fish.

In this next embodiment, the apparatus is comprised of a tubular shaped, watertight, housing closed at each end in the shape of a capsule or torpedo. A tuning fork is attached at some point to the interior wall of the shell. The housing is weighted in such a way as to allow one section of the housing to always remain oriented downward while the apparatus is floating in water, hereafter called the bottom of the shell. A small tube is attached to the bottom running rearward and upward at an angle to a point just short of contacting the tuning fork. This small tube is the striker guide. The striker is round and is inside the striker guides tube. There is enough clearance between the striker and the striker tub to allow the striker to move freely in the tube. When the fishing lure is jerked forward, the striker travels up the striker tube and strikes the tuning fork and then the striker rebounds, causing the tuning fork to vibrate.

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In this embodiment, the disclosed invention is housed in a short bodied waterproof, generic, fish shape shell referred to in the industry as a crankbait. These types of lures are produced in a multitude of sizes, colors, and with variations to the outer shell such as where the eyelet is located, that is used to attach the fishing line to the fishing lure. Some crankbaits have bills some do not. However all crankbaits have one thing in common; they all oscillate from side-to-side as they are used. A tuning fork is attached at some point along the interior wall of the fish shaped housing or shell. The striker is a pendulum having a hinged end, and a weighted end. The hinged end is attached to the interior of the housing or shell in such a way as to allow the weighted end to strike the tuning fork as the lure oscillates.

Components of all embodiments are interchangeable from one embodiment to another, i.e. a slide mounted striker in a top water fishing lure can be replaced with a pendulum striker and vice-versa, and a tuning for can be replaced with a comb and vice-versa. Additionally, most of the shells or housings used to encapsulate the disclosed invention are formed using injection molding.

The tuning fork and comb can be manufactured in such a way as to allow either or both to vibrate at such a low hertz as to produce more of a movement in the fishing lure than a sound.

The heretofore mentioned, and other features, aspects, and advantages of the instant invention will become better understood with regard to the following description, appended claims, and accompanying drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a view of the disclosed invention mounted in a generic torpedo shaped housing with one half of the housing removed.

Fig. 2 is a partially exploded view of Fig. 1

Fig. 3 is a view of the instant invention mounted in a generic torpedo shaped housing with one-half of the housing removed, showing one of several possible alternate type of strikers.

Fig. 4 is an exploded view of fig. 3

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Fig. 5 is a view of the disclosed invention mounted in a generic fish shaped housing that attempts to mimic a shad or pan fish. Most, but not all, of the fishing lures with this general shape are known in the industry as "crank baits".

Fig. 6 is an exploded view of Fig. 5

Fig. 7 is a view of the disclosed apparatus mounted in a generic fish shaped housing that attempts to mimic a long narrow fish like a minnow. Most, but not all of the housing with this general shape are known in the industry as "jerk baits." In this particular embodiment the tuning fork is hinge mounted and moves from side to side contacting the stickers mounted in the walls of the housing.

Fig. 8 is an exploded view of Fig. 7

Fig. 9 uses the same housing as Fig(s). 1 through 4. However, the tuning fork is mounted in the front of the housing in this embodiment and a pendulum is mounted in the rear of the unit and is used to strike the tuning fork.

Fig. 10 shows an alternate method of producing sound in a top water lure, replacing the tuning fork with a comb while using a pendulum to load and release the tooth of the comb, which causes the comb to vibrate.

Fig. 11 shows an alternate method of producing sound in a crank bate, replacing the tuning fork with a pence of spring and using a pendulum to load and release it.

Fig. 12 uses the same shell and tuning fork as fig(s). 1 through 4. with the tuning fork mounted in the rear of the unit and a pendulum striker mounted in the front of the apparatus.

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Fig. 13 uses the same shell and tuning fork as fig(s). 1 through 4 with another variation on the pendulum striker.

Fig. 14 uses the same shell and tuning fork as fig(s). 1 through 4 with a variation on the slide mounted striker. In this embodiment, the striker can be mounted in numerous positions; the striker relies on a spring to hold it in a ready position.

Fig. 15 is a close-up of one embodiment of the disclosed invention without a housing.

Fig. 16 is a close-up of one embodiment of the disclosed invention minus the housing.

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Fig. 17 is a close-up of an alternate method of powering the disclosed invention in that this apparatus transforms the pendulums bidirectional swinging motion to a unidirectional motion via a ratcheting gear allowing the drum and nibs to rotate in a single direction.

DRAWING CROSS-REFERENCE

FIGURE ONE:

- 101L-Left half, exterior housing. (shell)
- 101R-Right half, exterior housing. (shell)
- 102R-Interior walls of shell.
- 103-Eyelet to attach fishing line.
- 104-Generic treble hook and eyelet attachment.
- 105-Tuning fork.
- 106-stem end of tuning fork.
- 107-Tuning fork tines.
- 110-Striker.
- 111-Striker guide

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FIGURE TWO:

- 201L-Left half, exterior housing. (shell)
- 201R-Right half, exterior housing. (shell)
- 202R-Interior walls of shell.
- 203-Eyelet to attach fishing line.
- 204-Generic fishing hook and eyelet.
- 205-Tuning fork.
- 206-Stem end of tuning fork.
- 207-Tuning fork tines.
- 210-Striker
- 211-Striker guide.

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FIGURE THREE:

- 301L-Left half, exterior housing. (shell)
- 301R-Right half, exterior housing. (shell)
- 302R-Interior walls of shell.
- 303-Eyelet to attach fishing line.
- 304-Generic treble hook and eyelet.
- 305-Tuning fork.
- 306-Tuning fork stem.
- 307-Tuning fork tines.
- 308L-Left side of the first end of the striker guide tube.
- 308R-Right side of the first end of the striker guide tube.
- 309L-Left side of the second end of the striker guide tube.
- 309R-Right side of the second end of the striker guide tube.
- 310-Striker.
- 311R-Right half of striker guide tube.
- 311L-Left half of striker guide tube.

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FIGURE FOUR:

- 401L-Left half, exterior housing (shell)
- 401R-Right half, exterior housing. (shell)
- 402-Interior walls of shell.
- 403-Eyelet to attach fishing line.
- 404-Generic treble hook and eyelet attachment.
- 405-Tuning fork.
- 406-Tuning fork stem.
- 407-Tuning fork tines.
- 408L-Left side of the first end of the striker guide tube.
- 408R-Right side of the first end of the striker guide tube.
- 409L-Left side of the second end of the striker guide tube.
- 409R-Right side of the second end of the striker guide tube.

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- 410-Striker.
- 411R-Right half striker guide tube.
- 411L-Left half striker guide tube.

FIGURE FIVE:

- 501L-Left half, exterior housing. (shell)
- 501R-Right half, exterior housing. (shell)
- 502R-Interior walls of shell.
- 503-Eyelet to attach fishing line.
- 504-Generic fishing hook and eyelet.
- 505-Tuning fork.
- 506-Tuning fork stem.
- 507-Tuning fork tines.
- 510-Striker
- 519- Striker support and pivot pin.
- 520-First end of striker support and pivot pin.

521-Second end of striker support and pivot pin.

FIGURE SIX:

- 601L-Left half, exterior housing.
- 601R-Right half, exterior housing.
- 602R-Interior walls of shell.
- 603-Eyelet to attach fishing line.
- 604-Generic treble hook and eyelet attachment.
- 606-Tuning fork stem.
- 607-Tuning fork tines.
- 610-Striker
- 619-Striker support and pivot pin.
- 620-First end of the striker support and pivot pin.
- 621-Second end of the striker support and pivot pin.

FIGURE SEVEN:

- 701L-Left half, exterior housing.
- 701R-Right half, exterior housing.
- 702R-Interior walls of shell.
- 703-Eyelet to attach fishing line.
- 704-Generic fishing hook and eyelet.
- 705-Tuning fork.
- 706-Tuning fork stem.
- 707-Tuning fork Tines.
- 710L-Left striker.
- 710R-Right striker.
- 722-Tuning fork axle, pivot support and mounting pin.
- 723-First end of the pendulum axle.
- 724-Second end of the pendulum axle.
- 725-Tuning fork pivotally mounted support sleeve.

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FIGURE EIGHT:

- 801L-Left half, exterior housing.
- 801R-Right half exterior housing.
- 802-Interior walls of shell.
- 803-Eyelet to attach fishing line.
- 804-Generic treble hook and eyelet attachment.
- 805-Tuning fork.
- 806-Tuning fork stem.
- 807-Tuning fork tines.
- 810L-Left striker.
- 810R-Right striker.
- 822-Tuning fork axle, support and mounting pin.
- 823-First end of the pendulum axle.
- 824-Second end of the pendulum axle.

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- 825-Tuning fork pivotally mounted support sleeve.

FIGURE NINE

- 901L-Left half exterior housing. (shell)
- 901R-Right half exterior housing. (shell)
- 902R-Interior walls of housing.
- 903-Eyelet to attach fishing line.
- 904-Generic Fishing hook and eyelet.
- 905-Tuning fork.
- 906-Tuning fork stem.
- 907-Tuning fork tines.
- 910-Striker.
- 912-Pendulum.
- 913-Pendulum axle.
- 914-First end of the pendulum axle.

915-Second end of the pendulum axle.

FIGURE TEN

1001L-Left half housing. (shell)

1001R-Right half housing. (shell)

1002R-Interior walls of housing.

1003-Eyelet to attach fishing line.

1004-Generic fishing hook and eyelet attachment.

1010-Pick.

1012-Pendulum.

1013-Pendulum axle.

1014-First end of the pendulum axle.

1015-Second end of the pendulum axle.

1016-Pendulum pivotally mounted support sleeve.

1017-Mounted end of spring steel.

1018-Tooth end of spring steel.

FIGURE ELEVEN

1101L-Left half housing. (shell)

1101R-Right half housing. (shell)

1102R-Interior walls of housing.

1103-Eyelet to attach fishing line.

1104-Generic Fishing hook and eyelet.

1110- Nib or pick.

1112-Pendulum.

1113-Pendulum axle.

1114-First end of the pendulum axle.

1115-Second end of the pendulum axle.

1116-Pendulum pivotal mounting sleeve.

1117-Mounted end of spring steel.

1118-Tooth end of spring steel.

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FIGURE 12

- 1201L-Left half housing. (shell)
- 1201R-Right half housing. (shell)
- 1202R-Interior walls of housing
- 1205-Tuning fork.
- 1206-Tuning fork stem.
- 1207-Tuning fork tines.
- 1212-Pendulum.
- 1213-Pendulum axle.
- 1214-First end of the pendulum axle.
- 1215-Second end of the pendulum axle.
- 1216-Pendulum pivotally mounted support sleeve.

FIGURE THIRTEEN

- 1301R-Right half of housing. (shell)
- 1302R-Interior walls of housing. (shell)
- 1305- Tuning fork.
- 1306-Tuning fork stem.
- 1307-Tuning fork tines.
- 1327-Nylon, spring or plastic support.
- 1328-Tuning fork stem support.

FIGURE FOURTEEN

- 1401R-Right side of housing. (shell)
- 1402R-Interior walls of housing. (shell)
- 1405-Tuning fork.
- 1406-Tuning fork stem.
- 1407-Tuning fork tines.
- 1410-Striker
- 1411-Striker guide

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1429-Flat piece of spring steel.

1430-Contact point of striker

FIGURE FIFTEEN

1510-Nib or pick

1512-Pendulum.

1516- Pendulum pivotal mounting sleeve and drum.

1517-Mounting end of comb

1518-Tooth or teeth end of comb.

FIGURE SIXTEEN

1605-Tuning fork.

1606-Stem end of tuning fork.

1634-Tine weights

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FIGURE SEVENTEEN

1710-Nib or pick.

1712-Pendulum.

1713-Pendulum axle.

1714-First end of the pendulum axle.

1715-Second end of the pendulum axle.

1731-Flat piece of spring steel.

1732-Ratching gears.

1733A- Pendulum Pivotal mounting sleeve.

1733B-Nib Drum.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Referring now specifically to the drawing in Fig. 1, this embodiment of the disclosed invention is housed in a class of fishing lures known generally as top water lures. Top water lures are produced in a multitude of sizes, colors, and with small variations to the outer shell such as blunt noses to disturb more water when they are jerked forward, but they all have the same general shape and are retrieved with a jerking motion that lends itself well to the instant invention. Fig. 1 shows one of the embodiments of the disclosed apparatus. This embodiment is comprised of a waterproof shell 101R and 101L. The shell is tubular shaped and enclosed at each end with a parabolic shaped cap forming a one piece waterproof, somewhat capsule or torpedo shaped shell. This type of shell is most commonly formed by injection molding. The shell has been dissected into 101R, 101L. 101L has been removed to expose the interior of the fishing lure where the disclosed invention is housed. The shell has an interior wall 102R, 102L, an eyelet 103 which is attached to the exterior of the shell at one end to allow the fishing line to be attached to the fishing lure. Hereafter, in all embodiments referred to as a top water fishing lures, the end of the shell containing eyelet 103 will be considered the front end of the shell. On the opposite end of the shell is mounted a generic treble hook 104; hereafter, referred to as the back end or rear of the shell. The shell is weighted in such a manner as to allow one longitudinal portion to remain oriented downward while floating in water; this portion is thereafter referred to as the bottom of the shell.

A tuning fork 105, having a first end 106, the stem end. The stem end 106 is attached at some point to the interior wall of the shell; the exact placement of the tuning fork attachment will depend on several factors included, but not limited to, the balance of the overall unit, the frequency being produced by the tuning fork, and the overall volume of the sound that is desired. In Fig. 1, the tuning fork is attached at the rear of the shell for simplicity. The tuning fork having a second end, the tine end 107, which hangs free in the air space in the interior of the shell; a striker guide 111 having a first end 108 and a second end 109. The striker guide can be of any design, such as a small tube, a string, or anything that will hold the striker in place and allow it to contact the tuning fork once the fishing lure is jerked forward. For simplicity in Fig. 1, a small piece of wire is used as the

striker guide. The first end of the striker guide 108 is attached to the bottom of the shell forward and below of the second end. The second end of the striker guide 109 is attached to the top of the shell rearward and above the first end, thus forming an angle in relationship to the shell; the angle must be great enough to allow the striker to slide down to the bottom of the shell toward the first end of the Striker guide while the lure is at rest. The exact placement of the striker guide and mounting angle of the striker guide will depend on the how the individual fishing lure is orientated in the water. The angle of the striker guide 111 must be small in relationship to the shell to allow the striker to travel up the striker guide and strike the tuning fork when the fishing lure is jerked forward. The striker guide must be mounted in relationship to the tuning fork as to allow the striker to contact the tuning fork when the striker travels up the striker guide.

The striker 110 is mounted on the striker guide. The striker can be of any shape desired, and the striker can be made of any material capable of transferring energy to the tuning fork once it strikes the tuning fork. In the prototypes, we have used small ball and barrel shaped strikers, made of tungsten, stainless steel, brass, copper, aluminum and plastics. All of these materials work, each produce a unique sound as they strike the tuning fork. For simplicity in Fig. 1, a longitudinally mounted barrel shaped striker is used. While the fishing lure is at rest the striker 110 is located at the bottom forward most end of the striker guide 108. Once the fishing lure is jerked forward, the striker slides up the guide striking the tuning fork 105 then rebounds back to the bottom of the guide ready to be activated again.

A variation of the above embodiment would be to increase the diameter of the wire used as the striker guide to the point that it could support the striker 105 with only the first end 108 attached to the shell. This design would allow for a more compact design.

Fig. 2 is a partially exploded view of Fig. 1

Fig. 3 is eccentrically the same as Fig(s). 1 and 2, with one notable exception. The striker guide 311. The striker guide 311 having a first end 308R, 308L and a second end 309R, 309L. In practice the right and left half's of the striker tube form a single tube that supports the striker on the interior wall of the striker guide. In Fig. 3, the striker guide tube has been split lengthwise and the left half of the striker guide has been removed for

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clarity. The striker guide tube has two ends; a first end 308R, and 308L which is attached to the interior wall of the shell at the bottom forward of the second end, and a second end 309R, 309L that is rearward and above the first end at an angle stopping just short of the tuning fork 305. The second end of the striker guide tube 309R, 309L is close enough to the tuning fork 305 to keep the striker 310 from exiting the striker guide tube when the striker is accelerated up the tube by jerking the fishing lure forward. The only difference in the striker in Fig. 3 in comparison to Fig(s). 1 and 2 is that the striker in Fig. 3 does not require a hole in it for support since the striker is supported on its outer surface by the striker tube.

Fig. 4 is a partially expanded view of Fig. 3

Fig. 5. In this embodiment, the disclosed invention is housed in a short bodied waterproof generic fish shape shell referred to in the industry as a crankbait, 501R and 501L. Crankbaits come in a myriad of colors and sizes, as well as a variation in body styles. However, they all have one thing in common, while in use they are designed to oscillate from side-to-side, which is true whether they are retrieved at a somewhat steady pace, jerked, or trolled. In this embodiment, the disclosed inventing is designed to be activated by the side-to-side motion of a crankbait, and most other fishing lure that moves from side-to-side while in use.

The instant invention is comprised of a waterproof housing 501R and 501L, the shell with one or more generic hooks 504, an eyelet 503 to attach the fishing line, a tuning fork 505, having a first end 506 and a second end 507. The first end of the tuning fork is attached to the interior wall of the shell at some point, but the specific point at which the tuning fork is mounted will vary depending on the type, and volume of the sound the fishing lure is required to emit to attract a given species of fish. The second end of the tuning fork hangs free in the air cavity inside the shell. A striker support and pivotal mounting pin 519 having a first end 520 and a second end 521. The first end of the pivotal mounting pin 520 is rotatably mounted on the interior wall of the shell at the bottom of the shell. The second end of the pivotal mounting pin is rotatably mounted in the interior wall of the shell at the top of the shell. A striker 510 is mounted on the pivotal mounting pin in such a manner as to allow the striker to swing from side-to-side within

the shell. In this embodiment, the striker is mounted in a fashion that will allow it to strike the tuning fork once while the pendulum swings in one direction and the interior wall of the shell while the pendulum swings in the other direction.

A variation of the above embodiment would be to place a drum like device in the wall of the shell where the striker contacts the shells interior wall allowing the manufacture more control of the sound the fishing lure emits by choosing the material the drum is made of and by adjusting the size of the drum.

A second variation on the above embodiment would be to rotate the tuning fork 90 degrees and place the striker between the tines, which would allow the striker to contact the right tine when the fishing lure moved to the left and the left tine when the fishing lure moved right.

Fig. 6 is a partially expanded view of Fig. 5

Fig. 7 Another embodiment of the disclosed invention comprised of a fish shaped housing 701R, 702L, an eyelet for attaching the fishing line 703, one or more generic fishing hooks 704, two strikers 710R, 710L mounted on the interior walls of the shell or through mounted in the walls of the shell, a tuning fork 705 having two ends, a first end, the stem end 706, and a second end, the tine end 707, the first end 706 is pivotally attached to the interior wall of the shell by some type of hinge. Any type of hinge will do as long as it can support the tuning fork and allow it to freely swing from side-to-side. For simplicity in this case we are using a sleeve 725 attached to the first end of the tuning fork 706 and rotatably mounted on a axle 722.

This class of fish shaped lure is distinguishable from the fish shaped lure in Fig. 5 and 6 by its elongated shape, commonly referred to as a minnow shape; and the method of retrieval. This type of lure is retrieved in a variety of styles including but not limited to jerking, a steady constant retrieval, or a combination of the two, as well as used for trolling. The tuning fork hinge 722, 725 is attached to the interior wall of the shell 701. The exact point and angle at which the tuning fork hinge is attached to the shell will be dictated by the frequency produced and the volume of the sound the manufacture wishes the individual lure to transmit to the water. The striker 710R is embedded in the right half of the shell 701R and the second striker 710L is embedded in the left half of the shell

701L. The strikers are embedded in the shell in a location that will allow the tuning fork 705 to come into contact with the strikers as the tuning fork swings from side-to-side.

While the fishing lure is in use, the tuning fork swings from one side of the interior cavity of the shell to the other side, hitting a striker which starts the tuning fork to vibrating, at this point the tuning fork is transmitting sound through its stem 706 to the sleeve 725 into the axle 722 from the axle to the shell and then the sound is dispersed into the water. Since the tuning fork is already vibrating when it comes into contact with the second striker as it swings to the opposite side of the lure, it transmits a large burst of sound to the second striker which is transmitted to the shell then dispersed into the water. The strikers can also be through mounted in the wall of the shell allowing the strikers to transmit the burst of sound directly to the water. As the tuning fork rebounds from the second striker it starts vibrating ones again. This action is repeated over and over as long as the lure is in use. This embodiment of a fishing lure emits a loud burst of sound followed by a soft quite sound which in turn is followed by another loud burst.

Fig. 8 is an expanded view of Fig. 7

Fig. 9 this embodiment is a variation of a top water lure comprised of a waterproof shell 901R and 901L, the shell is tubular shaped and enclosed at each end with a parabolic shaped cap forming a one piece waterproof and somewhat capsule or torpedo shaped shell. This type of shell is most commonly formed by injection molding. The shell has been dissected into 901R, 901L. 901L has been removed to expose the interior of the fishing lure where the disclosed invention is housed. The shell has an interior wall 902R, 902L, an eyelet 903 that is attached to the exterior of the shell at one end to allow the fishing line to be attached, herein referred to as the front end of the shell. On the opposite end of the shell is mounted a generic treble hook 904, herein referred to as the back end or rear of the shell. The shell is weighted in such a manner as to allow one longitudinal portion of the shell to remain oriented downward while floating in water. This portion is therein referred to as the bottom of the shell. A tuning fork 905 having a first end 906, the stem end. The stem end 906 is attached at some point to the interior wall of the shell, the exact placement of the tuning fork attachment will depend on several factors included, but not limited to, the balance of the overall unit, the

frequency being produced by the tuning fork and the overall volume of the sound that is desired. In Fig. 9, the stem end of the tuning fork 906 is attached at the front of the shell for simplicity. The tuning fork having a second end, the tine end 907 which hangs free in the air space in the interior of the shell. What separates this embodiment from the rest is that the striker 910 is mounted on the weighted end of a pendulum. The pendulum can be of any design, in this case, we have chosen a half round shape. The striker can be mounted to allow the pendulum to rotate as many degrees from its resting position as desired before contacting the tuning fork. In this case, we have chosen 180 degrees. As the lure is jerked forward, the pendulum rotates in the opposite direction until the striker comes into contact with one of the tuning fork tines, which starts the tuning fork to vibrating and kicks the pendulum back in the opposite direction. An interesting side effect of using a pendulum is that once the striker hits the tuning fork, it rebounds and the pendulum continues to swing in an ever decreasing arc, until it loses all momentum or is activated again by a follow-up jerk on the fishing line. As the pendulum continues to swing, the lure moves in the opposite direction of the pendulum, in effect wiggling in the water, adding one more dimension to the lures ability to attract fish.

An alternative to the above would be to do away with the striker and allow the pendulum to strike the tuning fork.

A second alternative to the above embodiment would be to use a flexible material for a striker allowing the striker to bend as it comes into contact with the tuning fork, which will start the tuning fork to vibrating and allowing the pendulum to continue rotating past the tuning fork.

There are other designs that will somewhat mimic the sound produced by a tuning fork, and although these devices can not produce the sound quality a tuning fork can we have been able to attract several species of fish with them. From a monetary standpoint, they are less expensive to produce, so we feel compelled to include them herein.

Fig. 10, this embodiment is a variation using the same housing elaborated on in Fig(s). 1 through 4 in that the shell is tubular shaped, and enclosed at each end with a parabolic shaped cap forming a one piece waterproof, somewhat capful like or torpedo shaped shell. The tuning fork has been replaced with a single piece of spring steel

(a comb) having two ends, a first end 1017 that is capable of being mounted to the interior wall of the shell, and a second end 1018 with a protruding tooth or teeth capable of producing sound when struck by an object or bent from its resting position and released. Any type of material will work in place of the spring steel that will vibrate producing sound if it is struck or bent from its resting position and released. For simplicity, a piece of spring steel is used herein; the spring steel is mounted to the interior wall of the shell at some point. The exact point will be dictated by the frequency and volume of the sound to be transmitted to the water; the spring steel can contain one or more protrusion (teeth) to produce one or more sounds, or vibration. For simplicity, Fig.10 contains only one protruding tooth. This is the same type of instrument used to produce the sound in a music box; however, instead of being activated by a clock-work mechanism, it is powered by the action of a pendulum1012. A nib or pick1010 is mounted on the pendulum. This nib or pick can be mounted anywhere on the pendulum that will allow the nib or pick to contact the comb. For simplicity, in Fig.10. the nib is mounted on the pendulum pivotal mounting sleeve1016, and the pendulum pivotal mounting sleeve is rotatably mounted on the pendulum axle in such a way as to allow the pick 1010 to contact the tooth of the comb 1018; when the pendulum1012 swings from its resting position. As the lure is jerked forward, the weighted end of the pendulum moves (in relation to the housing) toward the rear of the housing. This action rotates the nib or pick bringing the nib or pick into contact with the second end of the comb. The tooth, the nib or pick bends the tooth from its resting position to a loaded position as the pendulum continues past the fully loaded position and the tooth is released allowing it to freely rebound thus vibrating and producing a sound. The mounting end of the spring steel 1007 is solidly mounted to the interior wall of the shell thus the sound is transferred to the shell and then transmitted to the water.

A variation on the above embodiment would be to add enough weight to one or more of the teeth of the comb to allow the tooth or teeth to vibrate very slow allowing the vibration of the weighted tooth or teeth to produce movement of the fishing lure rather than sound.

Fig. 11, in this next embodiment the housing (shell) 1101R, 1101L is identical to the one elaborated on in Fig(s). 5 and 6. The shell is a short bodied waterproof, fish shape shell referred to in the industry as a crankbait. The other components are: an eyelet 1306 to attach a fishing line to; one or more generic fishing hooks 1104, a piece of spring steel with one or more protruding teeth 1171, 1118 (comb), a nib or pick 1110, a pendulum 1112, a pendulum pivotal mounting sleeve 1116, a pendulum axle 1113;

The first end of spring steel, or comb 1171 is mounted on the interior wall of the shell at some point; the exact point will be dictated by the frequency and volume of the sound to be transmitted to the water. The spring steel or comb can contain one or more protrusion (teeth) to produce one or more sounds. For simplicity Fig.11 contains only one tooth which is the same type of instrument used to produce the sound in a music box; however, instead of being activated by a clock-work mechanism it is powered by the side-to-side motion of a pendulum 1112. Any type of material will work in place of the spring steel comb that will vibrate producing sound if it is struck or bent from its resting position and released. For simplicity, a piece of spring steel is used here for a comb. A nib or pick 1110 is mounted on the peripheral surface of the pendulum pivotal mounting sleeve 1116 which doubles as a nib drum. The pendulum pivotal mounting sleeve 1116 is rotatably mounted on the pendulum axle 1113 in such a way as to allow the nib or pick 1110 to contact the tooth of the spring steel comb 1118 when the pendulum 1112 swing from side-to-side. As the pendulum swings from one side of the lure to the opposite side the nib or pick bends the tooth from its resting position to a loaded position. As the pendulum continues past the fully loaded position the spring steel tooth is released allowing it to freely rebound thus vibrating and producing a sound. The spring steel is solidly mounted to the interior wall of the shell thus the sound is transferred to the shell and then transmitted to the water.

The aforementioned embodiment should work well in this as well as any type or shape of fishing lure that oscillates from side-to-side while in use.

Fig.12 this embodiment is a variation of that elaborated on in Fig(s). 1, through 4. The difference is that the striker has been replaced with a pendulum 1212, which is attached to the pendulum pivotally mounting sleeve 1216. The pendulum pivotally

mounting sleeve is rotatably mounted on the pendulum axle 1213 and the pendulum axle has two ends the first end 1214 is mounted in the interior wall of the left half of the shell 1202L and the second end is mounted in the interior wall of the right half of the shell 1202R. The pendulum is mounted in such a manner as to allow the weighted end of the pendulum to swing back and strike one of the tuning forks tines as the fishing lure is jerked forward, causing the tuning fork to vibrate producing sound that can be transmitted into the water.

A variation of the above embodiment would be to add a spring to the pendulum to hold the pendulum in a ready position. The spring should be capable of holding the pendulum in a ready position, and yet, should be easily overcome allowing the pendulum to strike the tuning fork once the fishing lure is jerked forward, which would allow the pendulum to be mounted in any position.

A second variation of the above embodiment would be to place a nib or pick on the pendulum or the pendulum pivotal mounting sleeve and mount the pendulum where the nib or pick would contact the tuning fork as the pendulum is activated allowing the nib to bend one of the tuning fork tines and release it causing the tuning fork to vibrate

Fig. 13 this embodiment is a variation of that elaborated on in fig(s).1 through 4. The only difference is the striker has been replaced with a small weight 1312 that is attached to a string, spring or a thin piece of solid plastic or any type of material that can withstand repeated bending without breaking 1327. The striker 1312 can be any shape and can be made of any material that will start the tuning fork vibrating when it strikes it. The striker 1312 can be hung from the inside top wall of the housing. If a spring or a piece of plastic strong enough to hold the weight of the striker upright is used the striker support can be mounted to the inside wall of the shell at the bottom of the shell or any angle between vertical and horizontal. The criteria for mounting the striker is that the striker must strike the tuning fork when the fishing lure is jerked forward, and then the striker must rebound allowing the tuning fork to vibrate. A side effect of using the above striker or any type of pendulum for a striker is that the lure continues to oscillate (for a short time) in the water after all input has stopped, this action adds another dimension to the fishing lures ability to attract fish.

A variation of the above embodiment would be to remove the tuning fork and use the striker alone to make sound by allowing the striker to hit the interior wall of the shell. This would have the added advantage of add movement to the fishing lure as the striker continues to swing after initial activation causing the fishing lure to move in the water.

Fig. 14 this embodiment is another variation of that elaborated on in Fig(s). 1 through 4. What singles out this embodiment is a leaf spring 1429 that is mounted in such a position as to allow the spring to accelerate the striker 1410 back to its starting point once the striker strikes the tuning fork. This design eliminates the need to angle the striker guide to allow the striker to slide back to its resting position.

A variation of the above embodiment would be to use a coil spring to attach the striker to the shell said spring would return the striker to its starting position.

Fig. 15 is an enlarged view of one embodiment of the apparatus without a shell comprised of: a pendulum 1512, a pendulum pivotal mounting sleeve 1516, a nib or pick 1510, a comb that consists of the mounting plate 1517 and a tooth 1518.

Fig. 16 is an enlarged view of a tuning fork 1605 with weights attached to the tines 1634. This type of tuning fork can be used to produce more of a movement in a fishing lure rather than a sound. Also, this type of tuning fork can be made to vibrate by the movement of the lure alone, by striking the tuning fork or by plunking the tuning for with a nib or pick.

Fig. 17 is a close-up of an alternate method of powering the disclosed invention. This apparatus transforms the pendulums bidirectional swinging motion to a unidirectional rotating motion via a ratcheting gear allowing the drum and nibs to rotate in a single direction. The apparatus is comprised of a pendulum 1712, a pendulum axle 1713, and a nib or pick 1710, a pendulum pivotal mounting sleeve 1733A, a nib or pick drum 1733B, the ratcheting gears 1732, and a retainer spring 1731.